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work is the absence of any real table of contents, the result being that it is very difficult to refer to the papers. Aside from this the volume is up to its usual standard. Among the more important papers within the scope of our pages are the following: one by Mr. Call upon the maps of Mammoth Cave, from which we learn that no really accurate map of the cave exists, the reason probably being that the owners are afraid that some one will tap their property and force them to divide the enormous admission price charged. Professor Burrage tells us that the water supply of Lafayette has been affected by *Uroglena*. Messrs. Hessler, Blatchley, Chipman, S. Coulter, Arthur, and Snyder give lists of additions to the flora of the state, and Miss Cunningham revises the species of *Plantago* of the United States. Miss Cunningham has studied the effects of drought upon the tissues of several cultivated plants, while M. B. Thomas repeats well-known statements regarding periodicity of root pressure. Messrs. Bitting and Davis have studied the bacteria of stables, and Miss Golden concludes that common yeasts have little or no pathogenic properties.

In the zoological field Mr. Rittger gives in outline a study of a digenic trematode found in pond snails and artificially fed to ducks, in which the adult condition was obtained. Mr. Butler adds to the list of Indiana birds and gives a detailed account of the bobolink within the state. Mr. Call gives an account of the aquatic mollusca of the state, and their relations to the river basins; 195 species are enumerated, and of these 130 are reported from the Wabash basin and 127 from the Ohio. B. M. Davis gives a poorly arranged, but nearly complete, bibliography of the pineal structures. Dr. J. R. Slonaker presents an abstract of his paper on the fovea of the eye, printed in full in the *Journal of Morphology*.

The study of the lakes, so prominent in other volumes of these proceedings, is largely ignored in the present volume, while geology and archeology are represented by but few papers. Dr. Moore gives an account, with a plate, of the Randolph County mastodon, now in the possession of Earlham College.

ANTHROPOLOGY.

The Races of Europe.—Dr. J. Deniker, in the *Bulletin of the Society of Anthropology of Paris*,¹ presents a “second preliminary

¹ *Les race de l'Europe*, tome viii, No. 4, p. 291.

communication" relating to his researches upon the races of Europe. A provisional classification is offered, subject to modification if necessary, as the investigation continues. This classification is based solely upon somatological characters at present. By taking three characters, as the cephalic index, stature, and color, and dividing each into three degrees, twenty-seven combinations are possible. Deniker's researches demonstrate the existence of six clearly marked combinations and four of less prominence. He therefore divides the people of Europe into six principal and four secondary races. For convenience of reference, I have formulated the following table from his detailed descriptions :

NAME (as given by Deniker).	COLORATION.	CEPHALIC INDEX.	STATURE.	
1. <i>Race Nordique</i>	Blond	72 to 78	1.72 M	Corresponding to the Germanic, Cymric, or Reihengräber race of certain anthropologists.
2. <i>Race Orientale</i>	Blond	82 to 83	1.63 to 1.64	Includes the Bielorouses, certain Lithuanians, etc.
3. <i>Ibero-insulaire</i>	Brunette	74 to 75	1.61 to 1.62	Spanish Peninsula, Sardinia, Sicily, etc.
4. <i>Occidentale</i> or <i>Cévennoise</i>	Brunette	85 to 87	1.63 to 1.64	The Celtic, Celto-ligurian, Celto-slave, or Alpine race of various anthropologists.
5. <i>Race Littorale</i> or <i>Atlanto-méditerranéenne</i>	Brunette	79 to 80	1.66	Atlantic and Mediterranean coasts.
6. <i>Adriatique</i> or <i>Dinarique</i>	Brunette	85 to 86	1.69 to 1.71	Extending with interruptions from Belgium to Croatia.

Prof. W. Z. Ripley, in his paper upon "The Aryan Question,"¹ divides the races of Europe into three groups, according to their cephalic index and other physical characters. The Mediterranean and Teutonic types are derived from that paleolithic long-headed race which first occupied western Europe. Later a round-headed race of "decidedly Asiatic affinities" invaded the country. They are most nearly represented at the present time by the Alpine or Celtic type of central Europe.

¹ The Racial Geography of Europe. Appleton's *Pop. Sci. Mon.*, vol. lii, p. 304.

Dr. Deniker believes that he has established a basis upon which to build deductions from the facts relating to archæology, topography, linguistics, etc. It will be noticed that his preliminary conclusions differ materially from the final results of Professor Ripley's careful studies. We shall await with interest for further accounts of Dr. Deniker's work; it may assist in establishing the true value of the data upon which the Anthro-po-sociologists, Ammon, Lapouge, and all "these head fellows" depend. At present this mathematical method seems to be too seductively easy.

FRANK RUSSELL.

ZOOLOGY.

The Development of Fresh-Water Bryozoa.¹—Another grand quarto on fresh-water Bryozoa by Braem. As many observations of broad interest are included in this work, it is desirable that especial attention should be directed to them.

Spermatogenesis. The spermatogonia contain a large nucleus with one or two nucleoli and a "Nebenkern." The number of chromosomes in the first division was not exactly made out; it was between twelve and sixteen. During the second division the number is smaller (six to eight), so that the first is doubtless the reducing division. The cytoplasm of a large number of spermatids fuse into a single mass; the axial filaments of the tails arise and are of cytoplasmic origin; the neck is formed by the aggregation at one point of microsomes that were previously scattered all about the nucleus; the head arises from the nucleus in that the chromatin first accumulates at one pole, then the nuclear sap is eliminated, and the whole body becomes smaller and dense. An erythrophile substance also passes from the nucleus into the cytoplasm.

The ovarian eggs have a nucleolus which is often dumb-bell-shaped or double and contains one or more contracting vacuoles. The cytoplasm exhibits two concentric zones, of which the outer contains large, deeply staining granules of unknown origin. Maturation stages were not observed.

Fertilization takes place in the ovary. The egg then passes into an "oöcium,"—a modified polypide,—to the wall of which the ovary may be said potentially to belong.

¹ Braem, F., Die geschlechtliche Entwicklung von *Plumatella fungosa*. Zoologica, Heft 23, 96 pp., 8 plates.